

# **MONTANA LAND INFORMATION GRANT APPLICATION**

**STATE FISCAL YEAR 2019**

**BLACKFEET RESERVATION, MT  
BROWNING AREA UTILITY  
MAPPING**

**FEBRUARY 15, 2018**

**TRIBAL TRANSPORTATION  
BROWNING, MT 59417**

Fiscal Year 2019 Montana Land Information Act Grant Application

Blackfeet Reservation, Montana

**APPLICATION FOR MLIA GRANT FUNDING**

**SECTION 1 – APPLICANT, PARTNER, AND PROPOSAL INFORMATION**

<b>Primary Applicant Contact Information</b> <i>(Please fill this section out in it entirety)</i>	
Name of Agency/Entity:	Blackfeet Nation
Department:	Transportation Planning
Division/Section:	Transportation
Street:	All Chiefs Road
City:	Browning
County:	Glacier
State:	MT
Zip Code:	59417
<b>Project Manager Contact Information:</b>	
Name:	Don White
Title:	Transportation Director
Email Address:	donywhite@yahoo.com
Phone Number:	406.338.7445
Fax Number:	406.338.7117
<b>Secondary Contact Information:</b>	
Name:	Toni Grant
Title:	Assistant Transportation Director
Email Address:	Granttoni@yahoo.com-
Phone Number:	406.338.7445
<b>MLIA Grant Funding Request &amp; Match:</b>	
Total Requested MLIA Funds:	\$29,100
Total Matched Funds:	\$32,580

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Proposal Information	
Date Submitted:	2-15-18
Identified Grant Priority:	Build Geographic Information Systems to Improve Local, Tribal, and Federal Government Workflows, Business Processes, and Operations
Annual or Multi-Year Proposal:	Annual
Proposal Prepared By:	Blackfeet Nation
Short Title of Proposal:	Blackfeet Nation – Browning Area Utility Mapping Project
<p>Executive Summary (<i>required – 250 maximum word count</i>):</p> <p>This project will be used to develop the geographic data layers for the GIS of the Blackfeet Tribes. The project will help Browning address issues related to the location, operation, and maintenance of their water, sanitary sewer, and storm sewer infrastructure. The data will assist in future development and land use planning. The work will include:</p> <ul style="list-style-type: none"> <li>• Training Tribal staff and Blackfeet Community College interns/students on the use of survey equipment and GIS software</li> <li>• Collecting survey grade GPS data for existing infrastructure</li> <li>• Data consolidation of existing infrastructure maps with surveyed / field verified data</li> <li>• Creating water and sewer GIS data layers</li> </ul> <p>This project meets the purpose of MLIA by implementing Montana's standards for the collection, data entry, and metadata management procedures for the Tribal Government's GIS. Through the coordination with the Montana State Library, the Tribal staff will create GIS data using best practices and standards - further developing the Tribe's GIS infrastructure. The data will build a foundation to evaluate their infrastructure, determine possible improvement needs, and facilitate the efficiency of future transportation and land use planning.</p>	
List All Past Awarded MLIA Grants:	
None	

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<b>Funding Partners:</b> <i>(required for each partner, copy box as needed)</i>	
Name of Contact:	None
Name of Agency:	
Street:	
City:	
County:	
State:	
Zip Code:	
Contact Email Address:	
Contact Phone Number:	

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## SECTION 2 – RELEVANCE

The Blackfeet Tribe is proposing to survey Browning area utility systems and incorporate that data into the Tribal and State Library GIS systems to fulfill MLIA Grant Category II:

*“BUILD GIS TO IMPROVE LOCAL AND TRIBAL WORKFLOWS, BUSINESS PRACTICES AND OPERATIONS”*

- a. *Land Use Planning* – To accommodate growth and provide the lack of suitable housing to overcome severe overcrowding, the Tribe’s land use plans must evaluate existing infrastructure. Expansion of Browning’s housing areas is often constrained by water and sewer system limitations, including sewer lagoon overload and insufficient water pressure. Even though the Tribe is aware of these issues in a general sense, the issues must be further defined prior to housing and commercial development as well as repair of existing systems to improve public health and safety.
- b. *Infrastructure Management* – The location and condition of most systems within Browning are largely unknown making maintenance and operations inefficient and expensive. Precise GIS mapping of Browning utilities will assist in efficient operations and the Tribe will be able to begin programmatic maintenance activities to prolong the life of their systems. Collection of this state compliant survey-grade spatial data will allow the Tribe to consolidate existing digital and hard copy utility maps into GIS data layers for each utility.
- c. *GIS Data & Program Development* - These new GIS data layers will expand on the Tribe’s existing database and set the standard for future data collection and consolidation.

These additions to the Blackfeet GIS, the Tribal Transportation Program and Tribal Planning Department can better define the existing infrastructure to analyze potential problems and necessary improvements. Working with Indian Health Services and the Two Medicine Water Company, the Tribe can better plan improvements or future transportation and land development projects that integrate efficiently into each entity’s existing infrastructure.

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## SECTION 3 – PUBLIC BENEFIT

Gathering of utility infrastructure data is critical to the Blackfeet Reservation for the following

1. **Asset and Infrastructure Management following the Town of Browning Disincorporation** – In 2017, the Town of Browning was disincorporated and the Blackfeet Tribe assumed responsibility of all existing Town of Browning assets, including water delivery, sanitary sewer, and storm drain systems. Most of these existing systems have not been mapped and the location and condition of the facilities is unknown. The understanding of existing infrastructure will benefit the public as follows:
  - a. Land Use Planning to alleviate severe overcrowding and associated environmental health issues, including disease.
  - b. Emergency Operations, including fire hydrant maintenance and repairs, as well as ensuring sufficient fire flows and pressures.
  - c. Alleviation of environmental hazards including mapping of sanitary sewer systems to define the conditions that may be contributing to current waste-water treatment system violations.
2. **Leverage Funding and Prepare for Water Compact Improvements** – In 2016, the State of Montana, the Federal Government, and the Blackfeet Tribe signed the Blackfeet Water Compact into law. Although Congress hasn't appropriated funding, the Tribe must be prepared to expeditiously implement municipal water system improvements for the Browning area. System mapping, facility condition assessments, and operating conditions will define the current system to analyze and implement future improvements.

The Blackfeet Tribe, through Project Manager Don White, has pioneered mapping and surveying technology projects on the Blackfeet Reservation. The following demonstrates the Blackfeet Tribal Transportation Program's project management experience and qualifications:

1. **Mapping and Survey Technology** – In 2008, the Blackfeet Nation and the other Rocky Mountain tribes, began their eight phase Tribal Mapping endeavor, which included the following efforts:



Figure 1 - Browning LiDAR mapping with proposed development shown in red, where utility service planning and mapping is needed to accommodate growth.

- a. **Development of Low Distortion Projections** to reduce distortion associated with using the State Plane Coordinate System and reduction in resurveys/errors associated with using the Modified State Plane Coordinate System.
- b. **Publication of a Tribal Coordinate Reference System Handbook** to assist surveyors and GIS professionals in the implementation of the Low Distortion Projections.
- c. **CORS and RTN Establishment** - Since the NGS no longer supports passive control, the Tribe is establishing Continuously Operating Reference Stations throughout the Reservation to promote efficient georeferenced surveys. CORS typically reduce survey times by approximately 20 percent. The Tribe has begun partnering with Washington to implement a Real Time Network to densify the system and promote precision agriculture and machine-controlled construction equipment.
- d. **LiDAR and Orthorectified Photogrammetry** – In 2014, the Blackfeet obtained LiDAR (32 points/square meter and RMSE 12 cm) and orthorectified photogrammetry for 9 square miles in the Browning area. The Tribe intends to acquire LiDAR for the remainder of the reservation in 2019. The Blackfeet have begun scoping and defining partners for obtaining LiDAR and orthorectified photogrammetry throughout the reservation. The Browning LiDAR mapping will serve as the basis for utility mapping and subsequent evaluation.
- e. **Collect and Compile GIS Based PLSS and Infrastructure Data** – As a result of previous mapping project efforts, the Tribe will be able to efficiently collect survey-grade data to create GIS



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based data that can be accessed by all land users. Blackfeet Tribal Transportation has already initiated this effort through its creation of a web-based road mapping system and is working with other tribal entities and the State Library to expand this platform.

In 2013, 2015, and 2017, the Tribe received the ACEC Engineering Excellence Honor Awards for its work on the development of Low Distortion Projections, publication of the Tribal Mapping Handbook and User Guide and implementation of CORS.

In addition, Don White is the director of the Tribal Transportation Program and manages the development of transportation projects, which includes topographic and utility survey to determine project feasibility and develop transportation improvement plans.

Specialized survey and GIS support services will be provided by the Tribe's engineering consultant, Northern Engineering and Consulting, Inc. (NECI). NECI has been providing engineering and survey services to the Tribe since 1999 and was selected through the Qualification Based Selection process. NECI has been providing training to the Tribal surveyors in data collection as part of a comprehensive mapping effort and has been working with the Tribe to establish a GIS mapping system, including a web-based mapping service. NECI would work with the Tribe to collect data in accordance with the State Library data collection standards and incorporate the data in their existing mapping system.

The Tribe supports the Montana Library's mission to support publicly accessible data and is establishing a GIS based mapping system accessible throughout the Tribe as a web-based mapping application. To further support the MLIA mission, the Tribe will provide the subsequent data to the Montana State Library and agrees to comply with data submission requirements.

Since the Tribal mapping project is a part of the Blackfeet Transportation Improvement Program, the Tribe already routinely prepares and submits quarterly financial and progress reports to comply with federal reporting requirements. The Tribe is prepared to modify the reports to fit State reporting requirements.

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## SECTION 5 – SCOPE OF WORK

1. **Goals and Objectives** – The goal of the Browning Utility Mapping Project is to establish a standardized GIS database with georeferenced point and line layers that accurately represent the existing condition and operational capacity of water and sewer services in Browning. Specific Objectives to meet this goal include:

- a. The collection of field points with attributes for all municipal water, sanitary sewer, and storm sewers in Browning.
- b. The creation of CAD data for future development of pressure pipe networks / linework based on the field data, field locates, and record utility plans as well as editing and data entry of office calculated attributes.
- c. The import of processed data into a working geodatabase. Upon review and finalization of data, it will be incorporated into the Blackfeet GIS and submitted to the Montana State Library.
- d. The training of the Tribal Transportation Program and interns/Blackfeet Community College Students on the collection, editing, and analysis of the finished data sets for better utilization of the data in the planning and scoping of future land development.

2. **Tasks or Activities** – The following tasks are required to complete the Browning Utility Mapping upon completion of the Statement of Work and receipt of funding on July 1, 2018:

- a. **Research and Planning** – The Tribe has determined that it can reasonably survey approximately 0.7 square miles of Browning area utilities in the timeframes allocated by the MLIA and within reasonable budget constraints. The Tribe, Two Medicine Water Company, and IHS will meet prior to beginning surveys to determine the area in most need of mapping.

In conjunction with the consulting technical experts, the Tribal Surveyor will research and compile recorded utility documents, complete interviews with knowledgeable experts of the existing services, and schedule utility locates. This task is estimated to take 3 months, but can occur concurrently with some field work.

- b. **Field Data Collection** – For the initial survey, the Tribal Surveyor and the interns/Blackfeet Community College students will train with the consultant on the practices and field procedures to standardize the collection of the various utility attributes and proper documentation for the entire project using the

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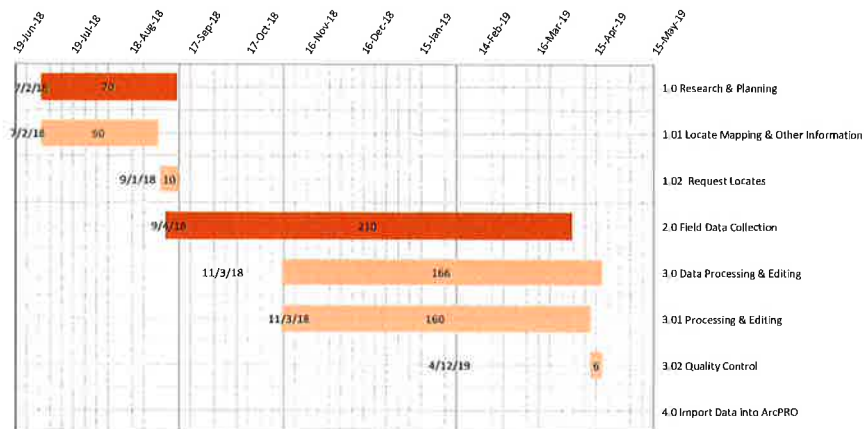
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*Rocky Mountain Region Tribal Field Survey Standards Manual.* Quality Control of the field data will be overseen by the consultant's Professional Land Surveyor and GIS Professional. This task is estimated to take 7 months, with winter delays caused by snow cover.

- c. **Data Processing and Editing** - Processing and QC of the raw survey data by the consultant and tribal surveyor under the supervision of the PLS. Import point data into AutoCAD for the future creation of pressure pipe networks / linework based on the field data, field locates, and record utility plans. The Tribal Surveyor, in conjunction with the consultant will also edit point attributes and data entry of office calculated line attributes. The Quality Control review is to be completed by Tribal Survey Crew that collected the field data. This task is estimated to take 12 weeks and can occur after portions of the data are completed.
  
- d. **Import Data into ArcPRO** - The processed data will then be imported into a working geodatabase for GIS mapping and a quality assurance review will be conducted by stakeholders and the data will be submitted to the Montana State Library. This task is estimated to take 3 weeks and will occur only after all previous tasks have been completed.

3. **Project Schedule** – The project tasks listed in the above section will be accomplished as follows:

Task	Start	End	Duration
<b>1.0 Research &amp; Planning</b>	<b>2-Jul-2018</b>	<b>11-Sep-2018</b>	<b>70</b>
1.01 Locate Mapping & Other Information	2-Jul-2018	31-Aug-2018	60
1.02 Request Locates	1-Sep-2018	11-Sep-2018	10
<b>2.0 Field Data Collection</b>	<b>4-Sep-2018</b>	<b>2-Apr-2019</b>	<b>210</b>
<b>3.0 Data Processing &amp; Editing</b>	<b>3-Nov-2018</b>	<b>18-Apr-2019</b>	<b>166</b>
3.01 Processing & Editing	3-Nov-2018	12-Apr-2019	160
3.02 Quality Control	12-Apr-2019	18-Apr-2019	6
<b>4.0 Import Data into ArcPRO</b>	<b>19-Apr-2019</b>	<b>10-May-2019</b>	<b>21</b>



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**SECTION 6 – BUDGET JUSTIFICATION AND BUDGET TABLE**

Project expenditures were estimated on an hourly basis for intern/student training and labor and professional fees for the Tribal surveyor and Consultant. Hourly fees were determined based on rate sheets from the Tribe's Consultant and Intern/Student labor rates were estimated based on typical hourly rates for similar positions.

	Cost/Hour	Hours	Total Cost
Research & Planning			
Survey Technician	\$74.00	150	\$11,100.00
Field Data Collection			
Intern/Student Labor	\$19.00	560	\$10,640.00
Survey Equipment	\$15.00	560	\$8,400.00
Surveyor	\$70.00	168	\$11,760.00
Travel and Milage			\$540.00
Subtotal			\$31,340.00
Data Processing			
GIS/Survey Technician	\$74.00	180	\$13,320.00
GIS Import			
GIS/Survey Technician	\$74.00	80	\$5,920.00
<b>Total</b>			<b>\$61,680.00</b>

The Blackfeet Department of Transportation will work with the Tribe's GIS analyst to contribute labor in-kind. To enhance the Tribe's GIS system for better transportation planning, the Blackfeet Department of Transportation will provide research efforts to locate existing records, use of survey equipment and vehicles, and half of the data collection and processing costs. It is proposed that MLIA funding be used for intern/student labor and the remaining half of the data collection and processing costs.

Tribal GIS data, including data generated by this project will be maintained by the Blackfeet Tribe's GIS technician.

**STATEMENTS OF SUPPORT (IF APPLICABLE)**

NA

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**MLIA GRANT BUDGET SUMMARY TABLE**

<b>MLIA GRANT BUDGET SUMMARY</b>							
	<b>MLIA Summary</b>	<b>Applicant Summary</b>			<b>Funding Partner Summary*</b>		<b>Total:</b>
Category	MLIA Share	Applicant Cash	Applicant In-kind	Applicant Subtotal	Funding Partner	Partner Subtotal	<b>MLIA Share, Applicant Subtotal, Partner Subtotal</b>
a. Personnel	\$19,870		\$11,820	\$11,820			\$31,690
a. 1. Fringe Benefits							
b. Travel			\$540	\$540			\$540
c. Equipment			\$8,400	\$8,400			\$8,400
d. Supplies & Materials							
e. Contractual	\$9,230		\$11,820	\$11,820			\$21,050
f. Other							
<b>Total</b>	<b>\$29,100</b>		<b>\$32,580</b>	<b>\$32,580</b>			<b>\$61,680</b>

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## SECTION 7 – RENEWABLE GRANT ACCOUNTABILITY

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## SECTION 8 – AUTHORIZING STATEMENT

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### Authorizing Statement

I hereby certify that I have read the application and the information and all statements in this application are true, complete and accurate to the best of my knowledge and that the project or activity complies with all applicable state, local and federal laws and regulations.

I further certify that this project will comply with applicable statutory and regulatory standards.

I further certify that I am (by my signature) authorized to enter into a binding agreement with the Montana State Library to obtain a grant if this application receives approval.

DON WHITE

Name (print or type)

TRANSPORTATION PLANNER

Title (print or type)

Don H. White, TRANSPORTATION PLANNER

Signature and Title of Authorized Representative(s) of Public Entity Applicant

2/14/2018

Date

**SECTION 9 – CHECKLIST – SIGNATURES REQUIRED**

*Applicant's Project Manager, defined Section 1, must initial in ink or mark 'n/a' if a section is not applicable.*

Initial or mark n/a	Completed Required Task
D.W.	<b>Proposal Prepared by an outside party – I have read this document in its entirety. (if applicable)</b>
D.W.	<b>Section 1 – Applicant, Partner, and Proposal Information</b>
D.W.	Primary Applicant Information
D.W.	Funding Partner (if applicable)
D.W.	Proposal Information
N/A	List All Past Awarded MLIA Grants
D.W.	<b>Section 2 – Relevance (300 max word limit)</b>
D.W.	<b>Section 3 – Public Benefit</b>
D.W.	<b>Section 4 – Project Management</b>
D.W.	<b>Section 5 – Scope of Work Narrative (4-page limit)</b>
D.W.	<b>Section 6 – Budget Justification Narrative and Table (3-page limit)</b>
D.W.	Budget Justification Narrative
D.W.	Complete Budget Table
N/A	<b>Section 7 – Funding Partner Statements of Support (if applicable)</b>
N/A	<b>Section 8 – Renewable Grant Accountability Narrative (if applicable)</b>
N/A	FY2018 Grantee Report (if applicable)
N/A	Past MLIA Grant Project Narrative (if applicable)
D.W.	<b>Section 9 – A Signed Authorizing Statement</b>